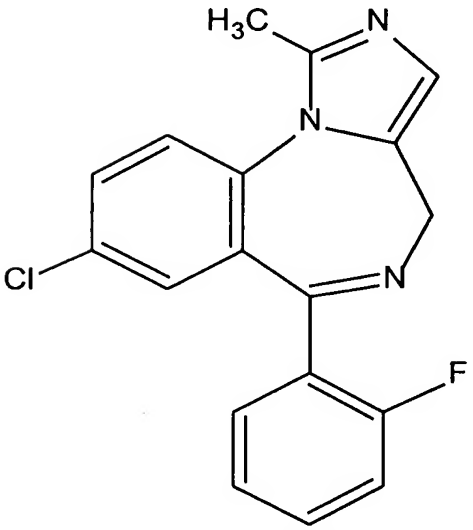
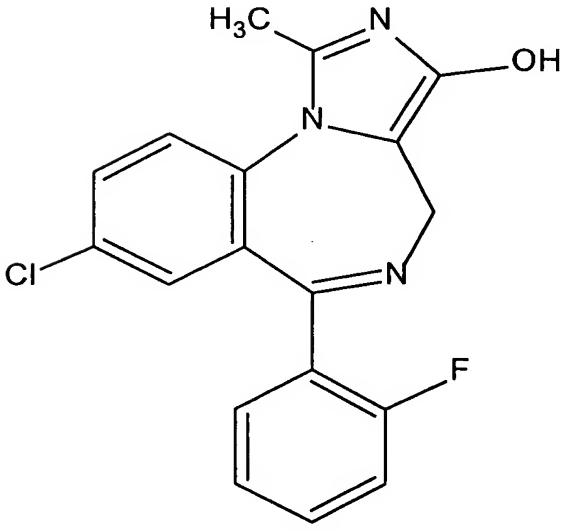
CYP3A4



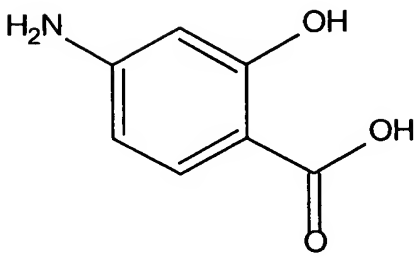
MDZ (Midazolam)



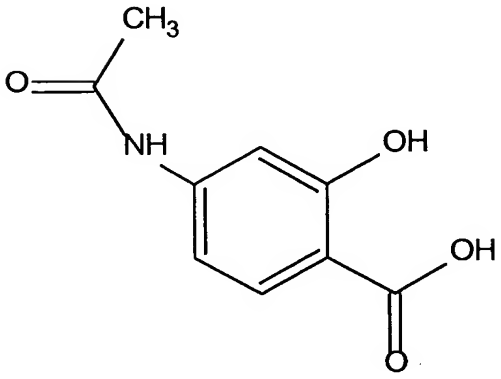
1-OH-MDZ (1-Hydroxymidazolam)

Fig. 1

NAT1



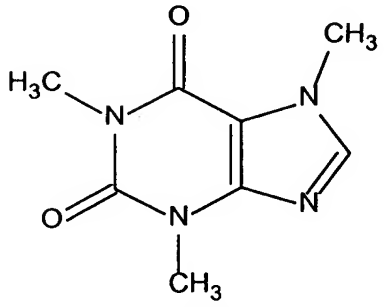
p-ASA (p-aminosalicylic acid)



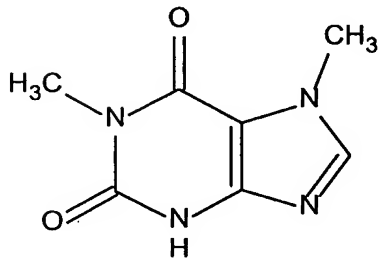
Acetyl-pASA (acetyl-p-aminosalicylic acid)

FIG. 2

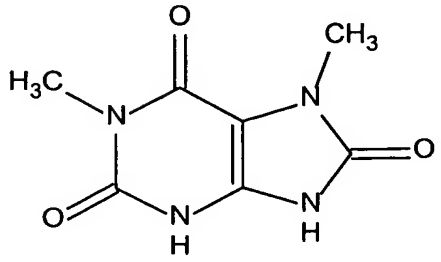
CYP1A2



Caffeine (1,3,7-trimethylxanthine)



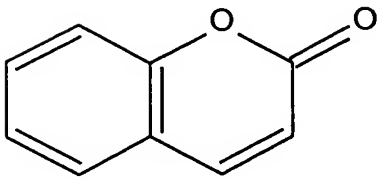
1,7-DMX (1,7-dimethylxanthine)



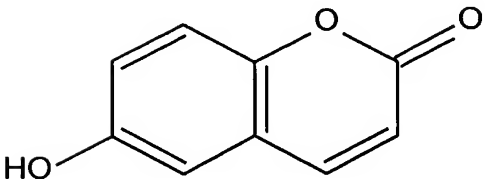
1,7-DMU (1,7-dimethyluracil)

FIG. 3

CYP2A6



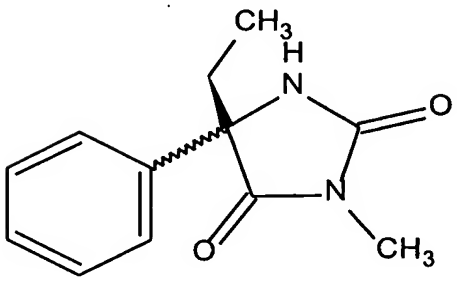
Coumarin



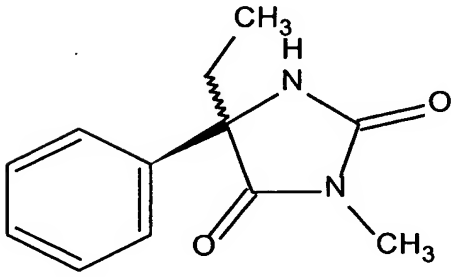
7-Hydroxycoumarin

Fig. 4

CYP2C19



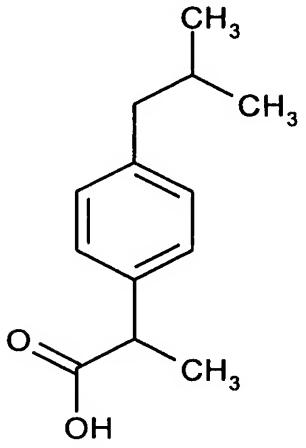
R-(-)-Mephenytoin



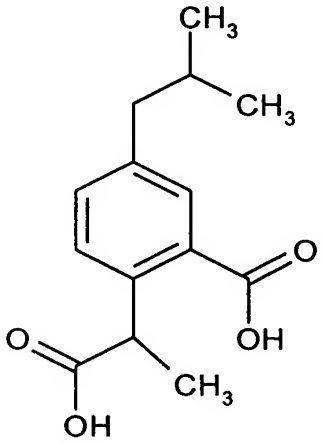
S-(+)-Mephenytoin

Fig. 5

CYP2C9



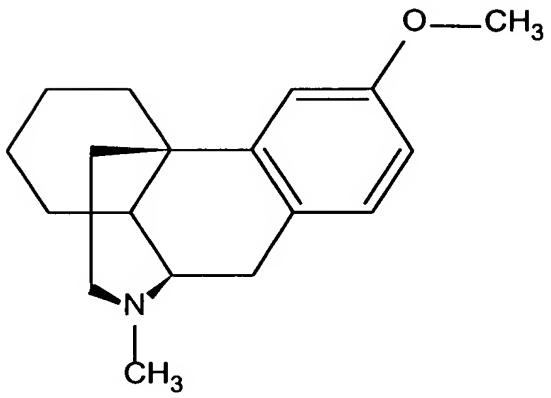
(s)-Ibuprofen



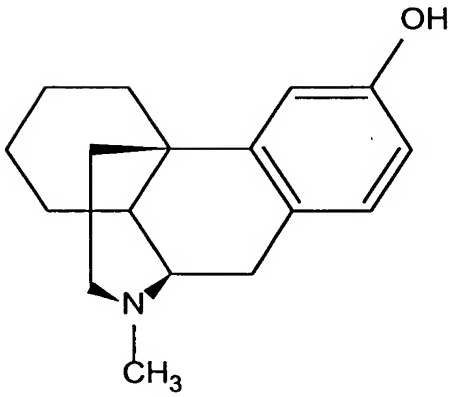
2-carboxyibuprofen

FIG. 6

CYP2D6



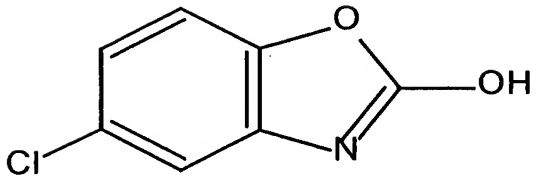
Dextromethorphan



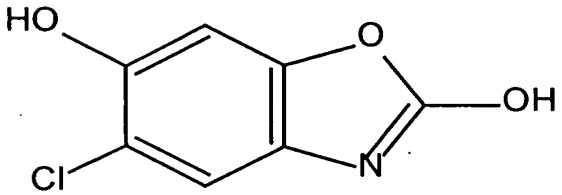
Dextrorphan

Fig. 7

CYP2E1



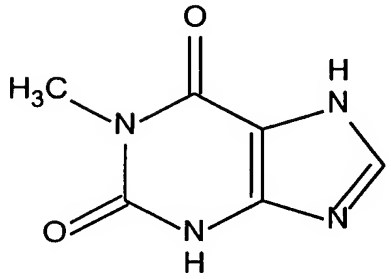
Clorzoxazone



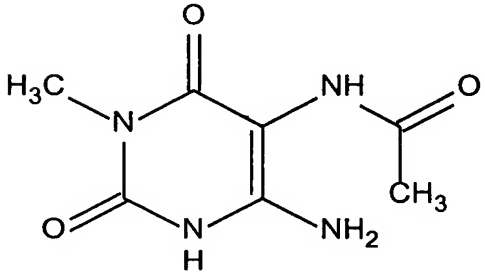
6-Hydroxychlorzoazone

Fig. 8

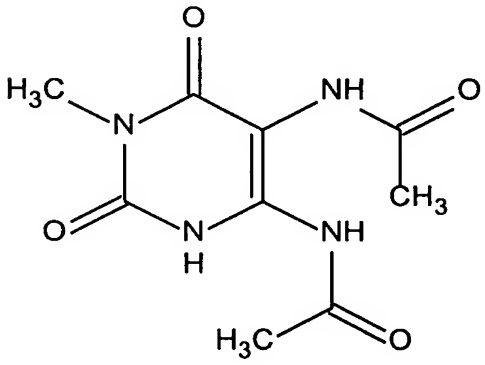
NAT2



1X (1-methylxanthine)



AAMU (5-acetamino-6-amino-methyluracil)



AFMU (5-acetamino-6-formylamino-methyluracil)

FIG. 9

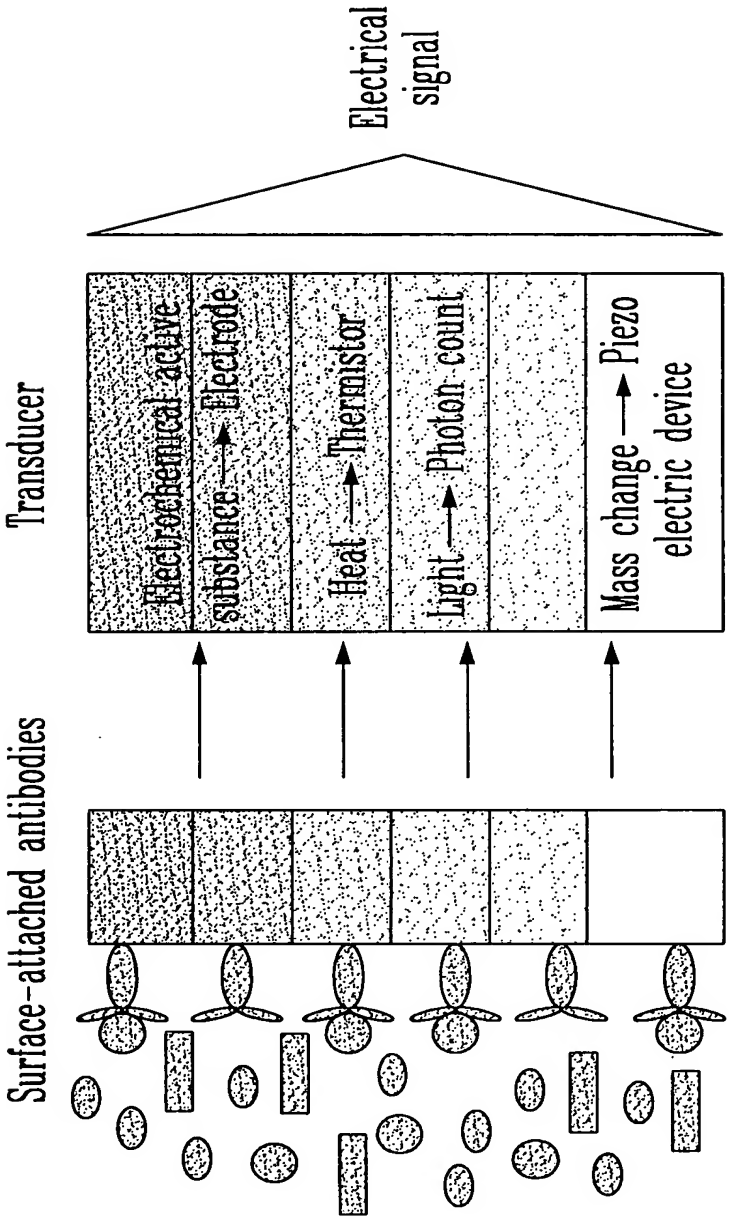

Electrical signal
Transducer
Electrochemical active substance → Electrode
Heat → Thermistor
Light → Photon count
Mass change → Piezo electric device
Surface-attached antibodies

FIG. 10

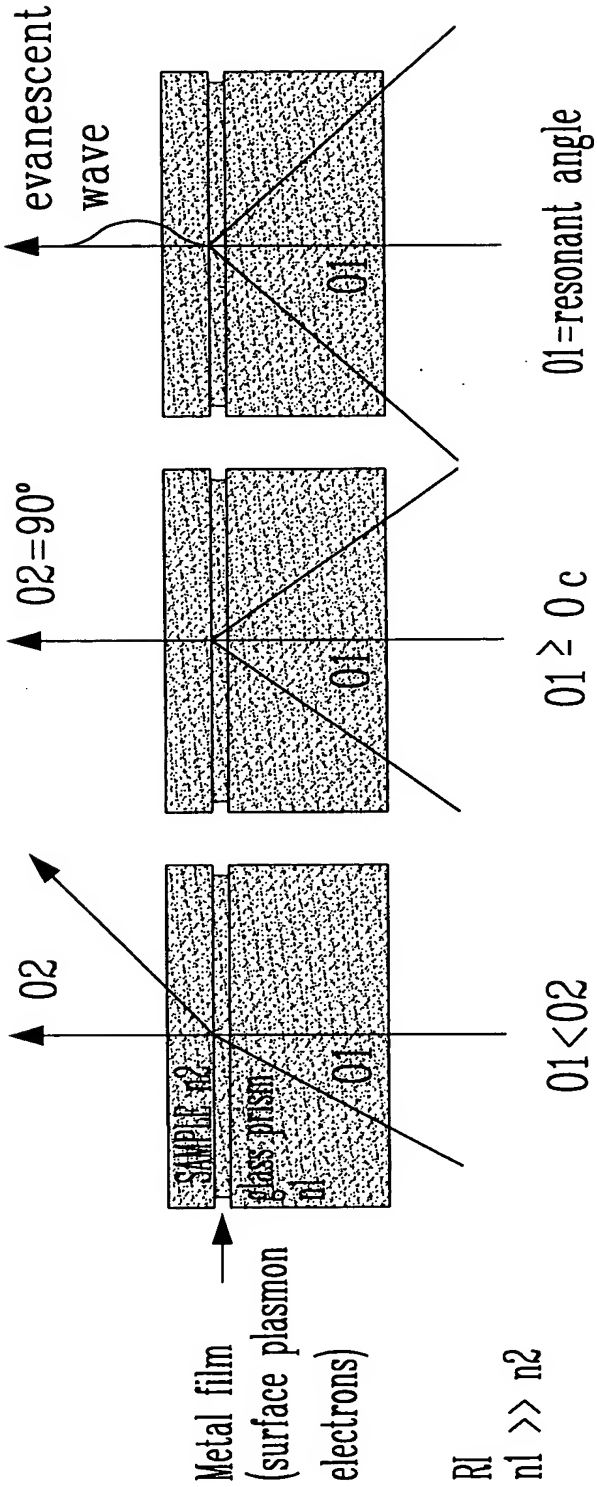

evanescent wave
02=90°
02
Metal film (surface plasmon electrons)
SAMPLE n2
glass PRISM n1
01
01=resonant angle
01 ≥ 0c
01<02
RI
n1 >> n2

FIG. 11

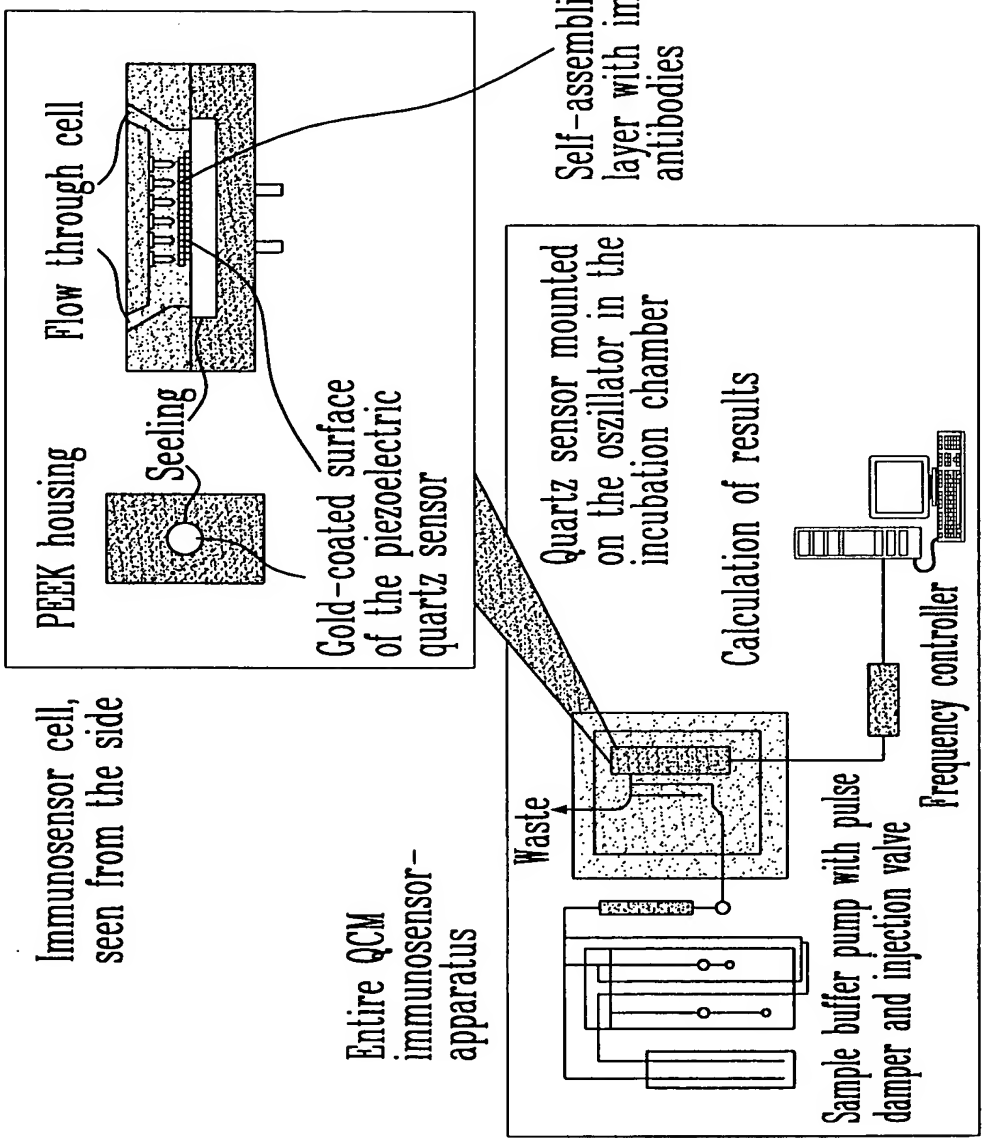

Immunosensor cell, seen from the side
PEEK housing
Flow through cell
Seeling
Gold-coated surface of the piezoelectric quartz sensor
Self-assembling mono-layer with immobilized antibodies
Entire QCM immunosensor-apparatus
Waste
Quartz sensor mounted on the oszillator in the incubation chamber
Calculation of results
Sample buffer pump with pulse damper and injection valve
Frequency controller

Fig. 12

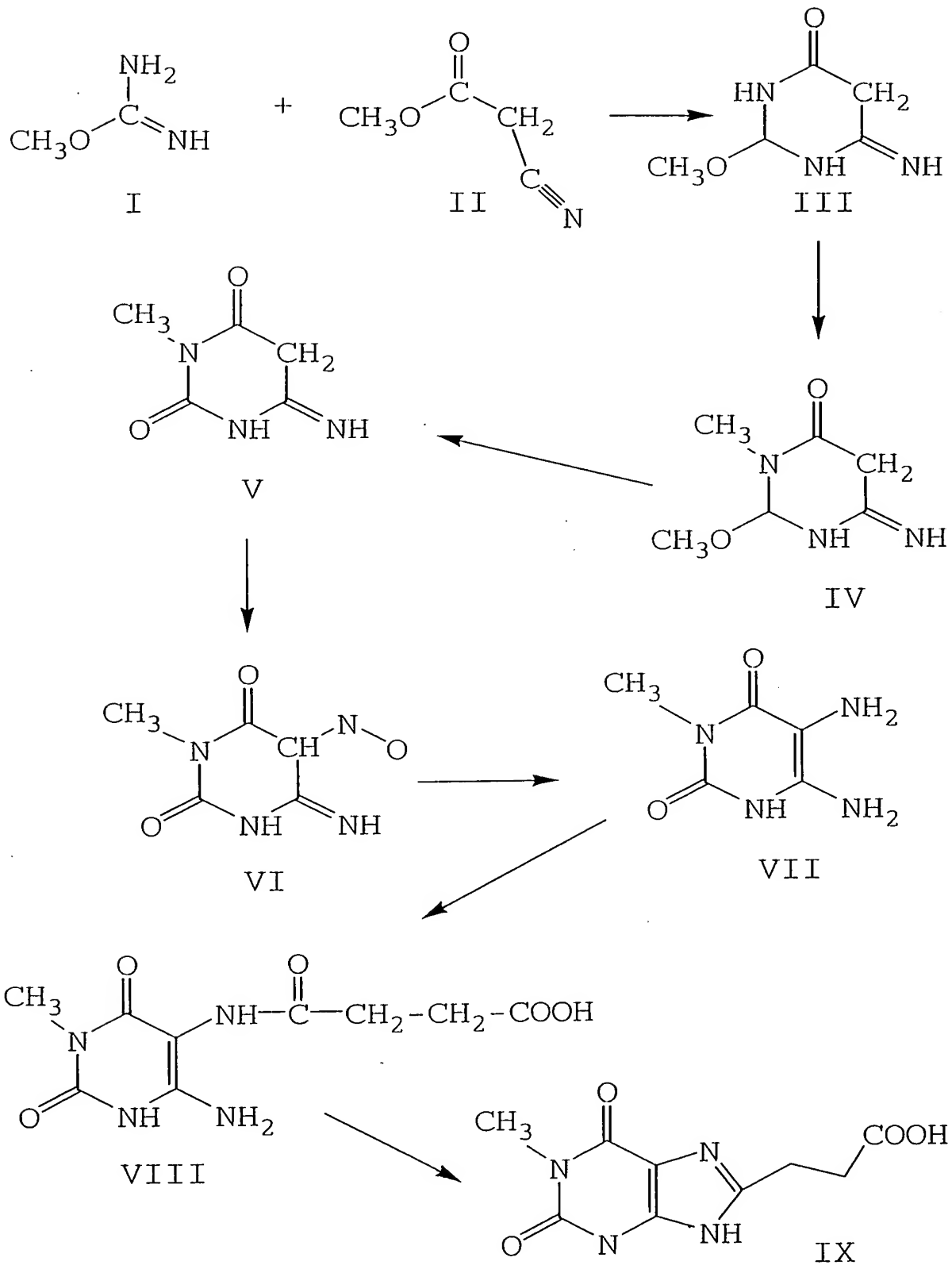
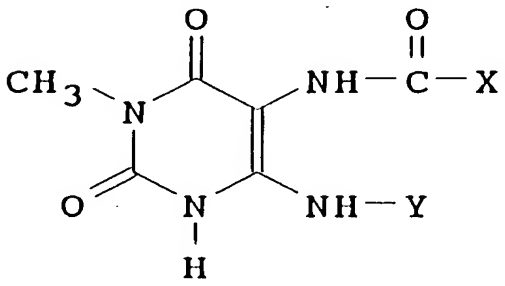
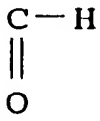

I
II
III
IV
V
VI
VII
VIII
IX
AAMU-hemisuccinic acid
1 methyl xanthine-8-propionic acid

Fig. 13

Derivatives of AAMU (5-acetamino-6-amino-3-methyluracil) or AFMU (5-acetamino-6-formylamino-3-methyluracil)



Where Y is

H or 

X

$(CH_2)n-COOH$ where n = 2,3 or 4

$(CH_2)n-C(=O)-NH-NH_2$

$(CH_2)n-C(=O)-NH-(CH_2)n-NH_2$

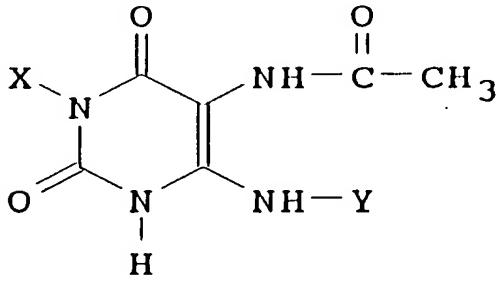
CH_2-X' where X' is I, Br, or Cl

$CH_2-S-(CH_2)n-NH_2$

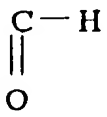
$CH_2-S-CH_2-CH_2-OH$

FIG. 14

Derivatives of AAMU (5-acetamino-6-amino-3-methyluracil) or AFMU (5-acetamino-6-formylamino-3-methyluracil)



Where Y is

H or 

X

$(CH_2)n-COOH$ where n = 2,3 or 4

$(CH_2)n-C(=O)-NH-NH_2$

$(CH_2)n-C(=O)-NH-(CH_2)n-NH_2$

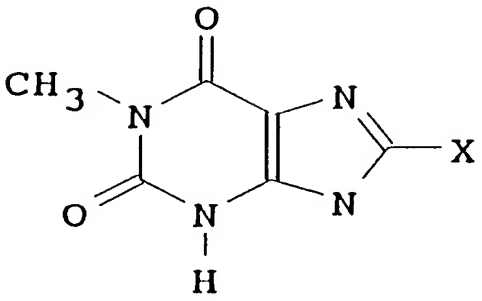
CH_2-X' where X' is I, Br, or Cl

$CH_2-S-(CH_2)n-NH_2$

$CH_2-S-CH_2-CH_2-OH$

FIG_15

Derivatives of 1X (methylxanthine)



X

$(CH_2)n-COOH$ where n = 2,3 or 4

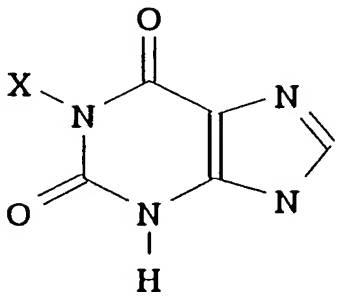
$(CH_2)n-C(=O)-NH-NH_2$

$(CH_2)n-C(=O)-NH-(CH_2)n-NH_2$

$(CH_2)n-C(=O)-NH-(CH_2)n-SH$

FIG-16

Derivatives of 1X (methylxanthine)



X

$(CH_2)n-COOH$ where n = 2,3 or 4

$(CH_2)n-C(=O)-NH-NH_2$

$(CH_2)n-C(=O)-NH-(CH_2)n-NH_2$

$(CH_2)n-C(=O)-NH-(CH_2)n-SH$

Fig-17

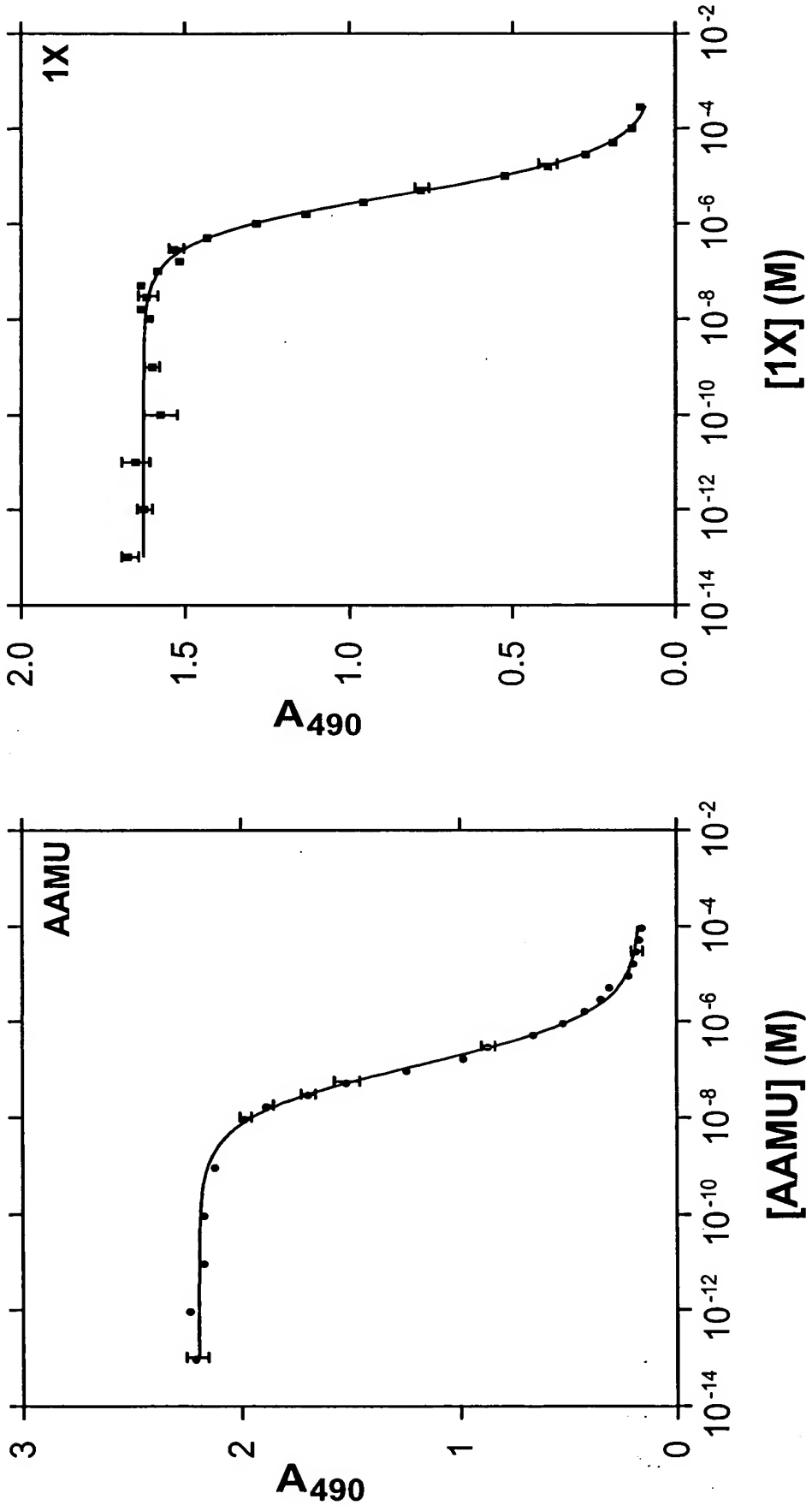

1X
2.0
1.5
1.0
0.5
0.0
A490
10-14
10-12
10-10
10-8
10-6
10-4
10-2
[1X] (M)
AAMU
3
2
1
0
A490
10-14
10-12
10-10
10-8
10-6
10-4
10-2
[AAMU] (M)

FIG. 1B

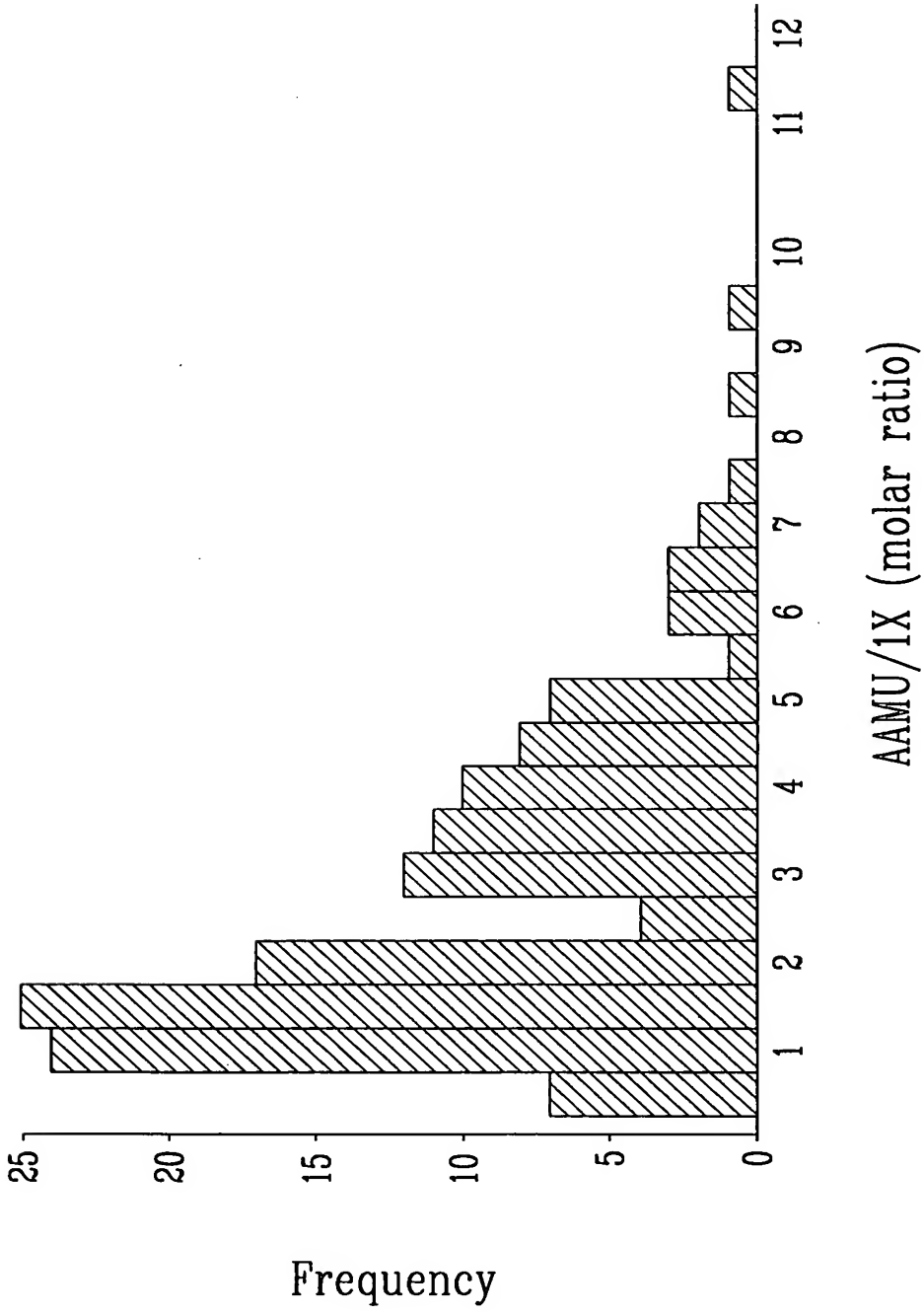
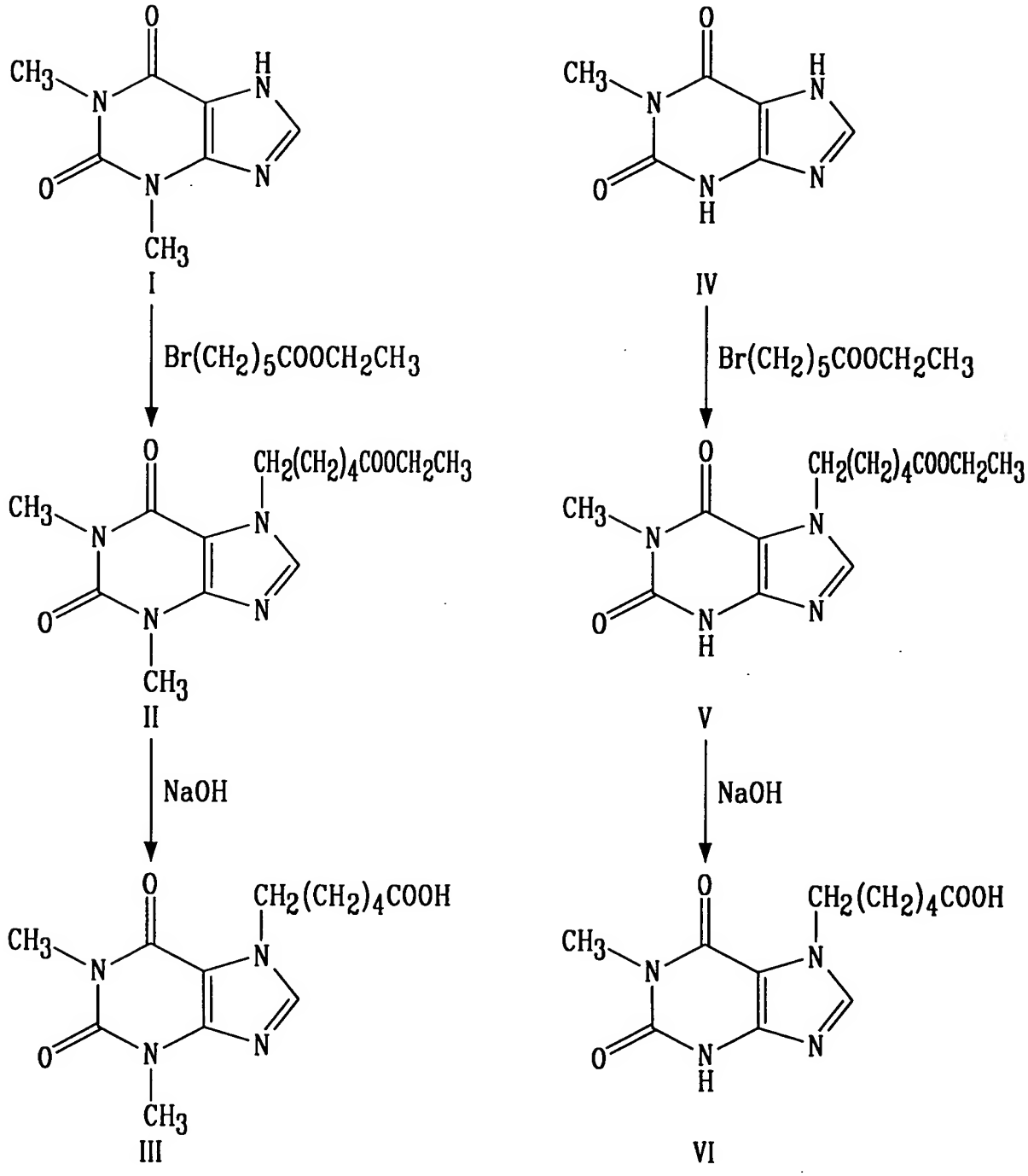

Frequency
25
20
15
10
5
0
1
2
3
4
5
6
7
8
9
10
11
12
AAMU/1X (molar ratio)

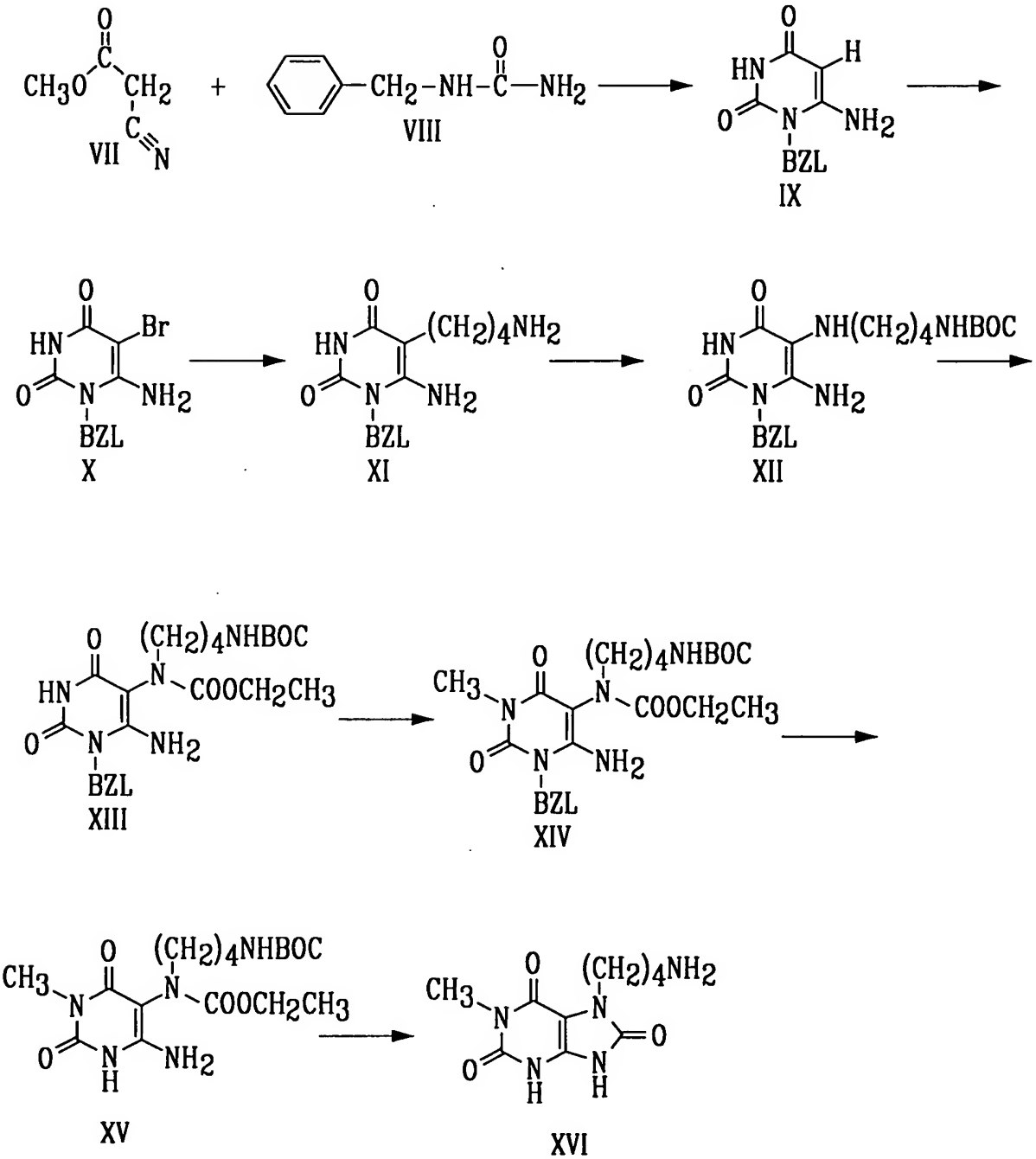
Fig. 10



Caffeine derivative

1,7-dimethylxanthine derivative

FIG. 20



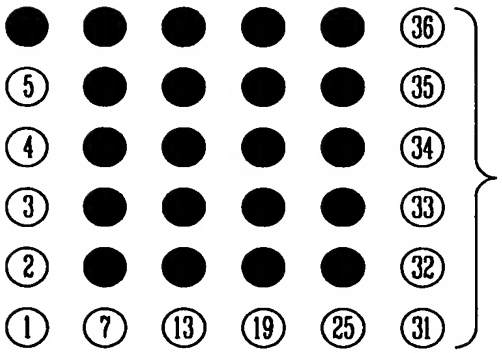
1,7-dimethyluric acid derivative

FIG. 21

	1	2	3	4	5	6	7	8	9	10	11	12
A	Blk	STD8	STD16	S1	S9	S5	S1	S9	S5	BIK	STD8	STD16
B	STD1	STD9	STD17	S2	S10	S6	S2	S10	S6	STD1	STD9	STD17
C	STD2	STD10	STD18	S3	S11	S7	S3	S11	S7	STD2	STD10	STD18
D	STD3	STD11	STD19	S4	S12	S8	S4	S12	S8	STD3	STD11	STD19
E	STD4	STD12	STD20	S5	S1	S9	S5	S1	S9	STD4	STD12	STD20
F	STD5	STD13	STD21	S6	S2	S10	S6	S2	S10	STD5	STD13	STD21
G	STD6	STD14	STD22	S7	S3	S11	S7	S3	S11	STD6	STD14	STD22
H	STD7	STD15	STD23	S8	S4	S12	S8	S4	S12	STD7	STD15	STD23

FIG. 22

6X6 ARRAY



ARRAY LAYOUT:

ALIGNMENT MARKERS ○
BUFFER BLANKS ○
ANTIGENS ●

ANTIGEN KEY:

1. BIOTINYLATED BSA MARKER
2-6. BUFFER BLANKS
7. NAT2: AAMU
8. BIOTINYLATED BSA MARKER
9. NAT2: 1X
10. NAT1: pASA
11. NAT1: ACETYL-pASA
12. CYP1A2: CAFFEINE
13. BIOTINYLATED BSA MARKER
14. CYP1A2: 1,7-DMX
15. CYP1A2: 1,7-DMU
16. CYP2A6: COMARIN
17. CYP2A6: 7-HYDROXYCOUMARIN
18. CYP2C19: R- (-) -MEPHENYTOIN
19. BIOTINYLATED BSA MARKER
20. CYP2C19: S- (+) -MEPHENYTOIN
21. CYP2C9: DICLOFENAC
22. CYP2C9: 4-HYDROXYDICLOFENAC
23. CYP2D6: DEXTROMETHORPHAN
24. CYP2D6: DEXTRORPHAN
25. BIOTINYLATED BSA MARKER
26. CYP2E1: CHLORZOXAZONE
27. CYP2E1: 6-HYDROXYCHLORZOXAZONE
28. CYP3A4: MIDAZOLAM
29. CYP3A4: 1-HYDROXYMIDAZOLAM
30. BUFFER BLANK
31-36. BIOTINYLATED BSA MARKER

FIG. 24

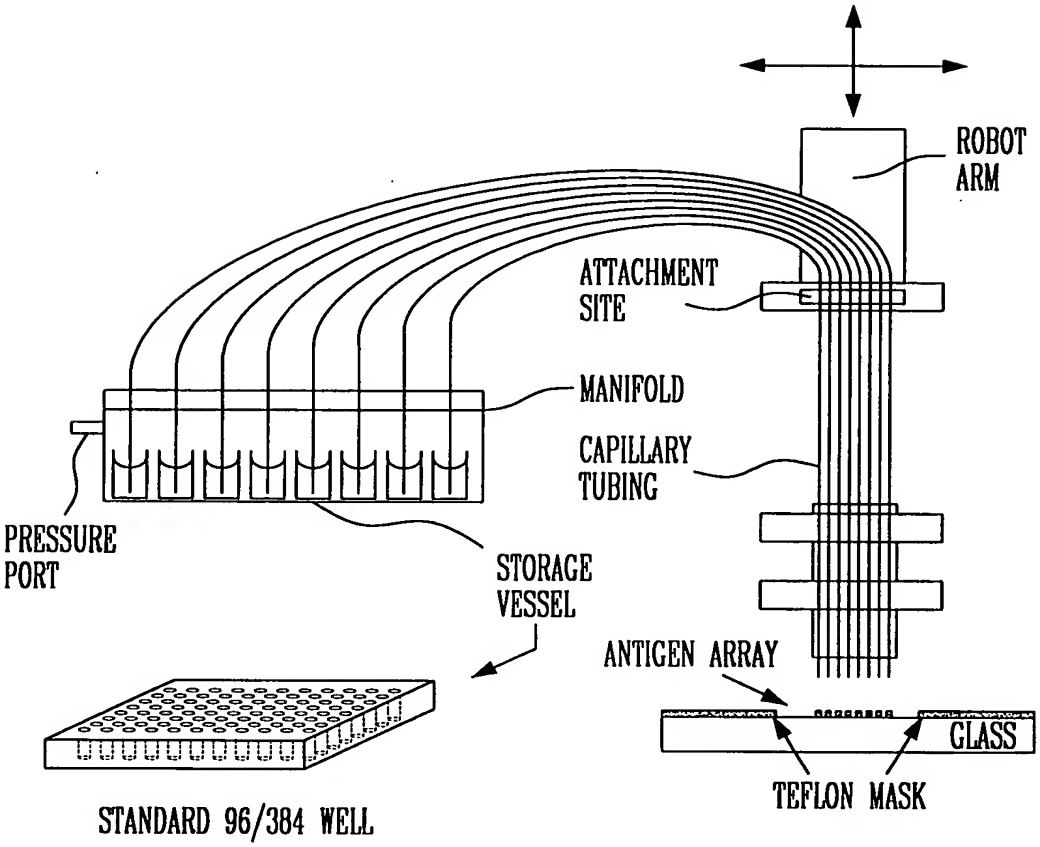

ROBOT ARM
ATTACHMENT SITE
MANIFOLD
CAPILLARY TUBING
PRESSURE PORT
STORAGE VESSEL
ANTIGEN ARRAY
GLASS
TEFLON MASK
STANDARD 96/384 WELL

FIG_25

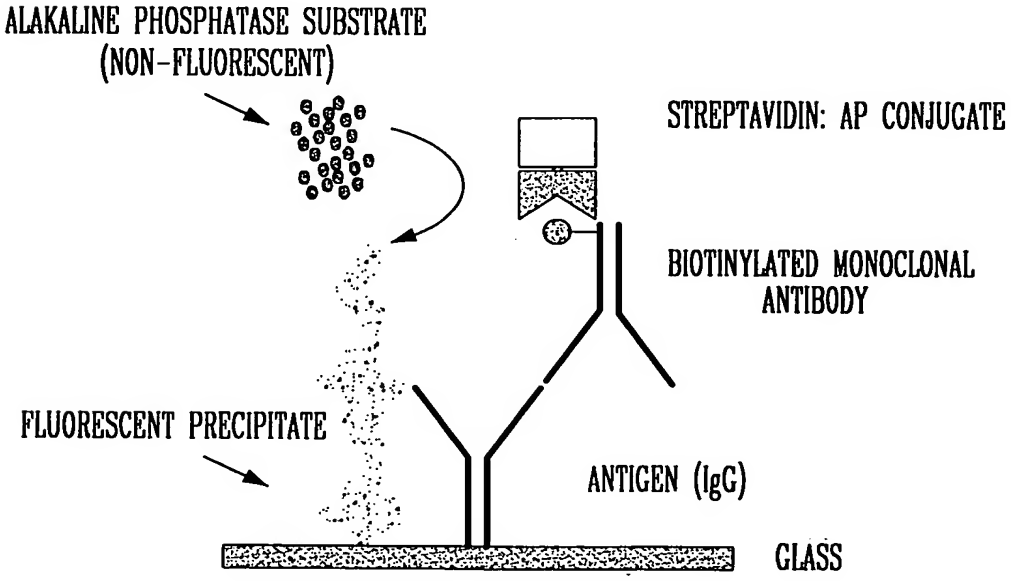

ALAKALINE PHOSPHATASE SUBSTRATE
(NON-FLUORESCENT)
STREPTAVIDIN: AP CONJUGATE
BIOTINYLATED MONOCLONAL ANTIBODY
FLUORESCENT PRECIPITATE
ANTIGEN (IgG)
GLASS

FIG_26

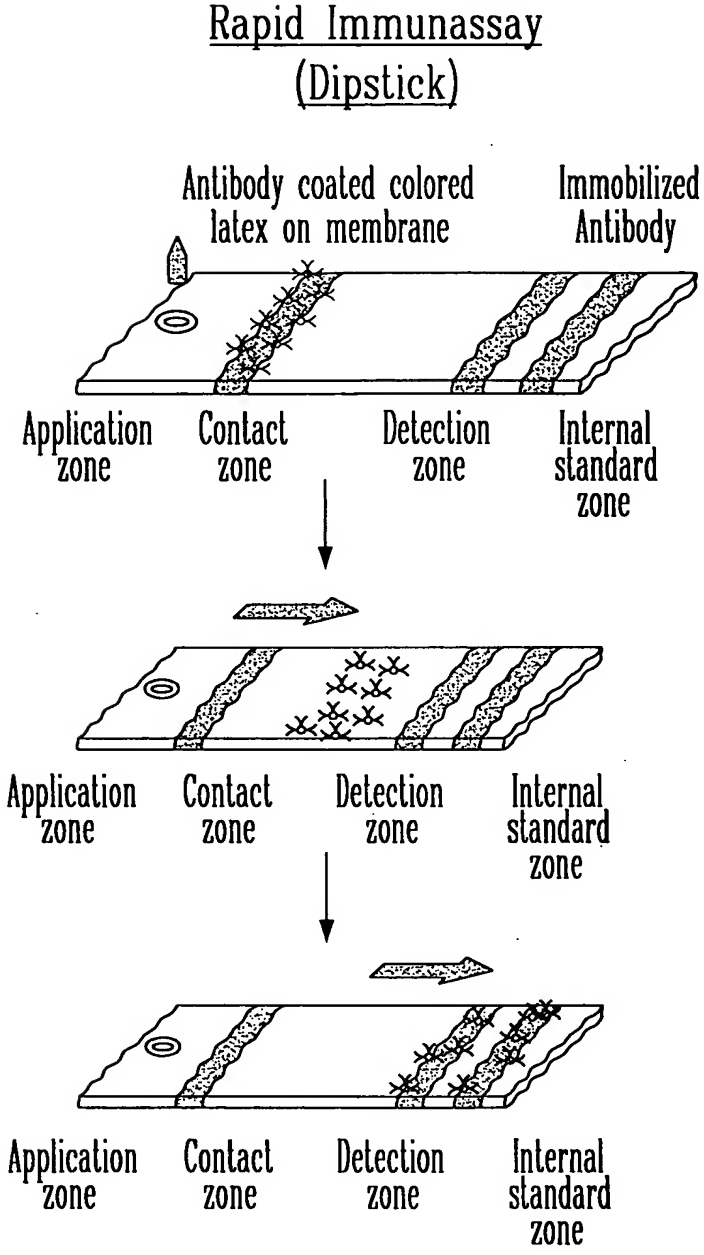

Rapid Immunassay
(Dipstick)
Antibody coated colored latex on membrane
Immobilized Antibody
Application zone
Contact zone
Detection zone
Internal standard zone
Application zone
Contact zone
Detection zone
Internal standard zone
Application zone
Contact zone
Detection zone
Internal standard zone

FIG. 27

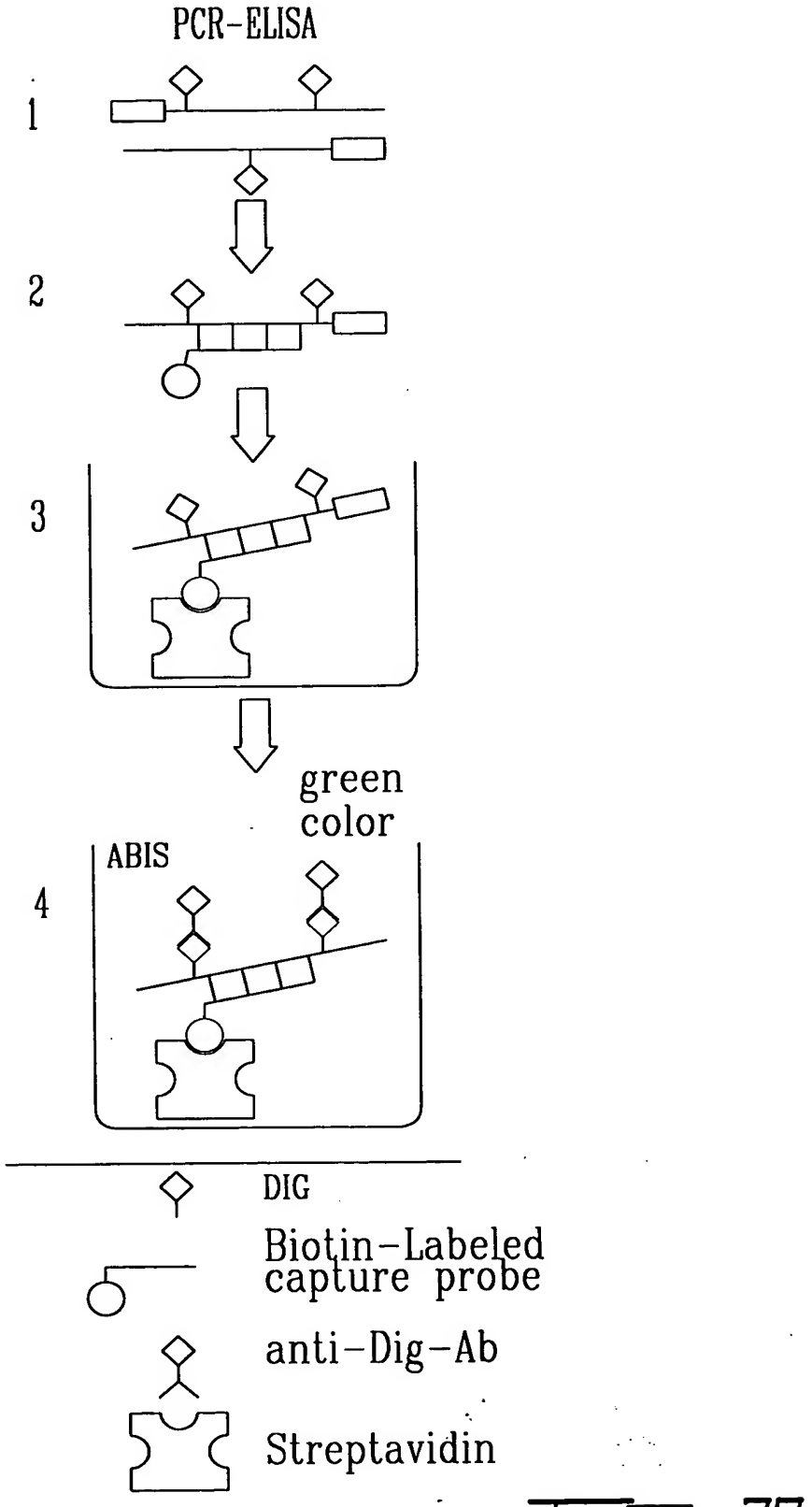
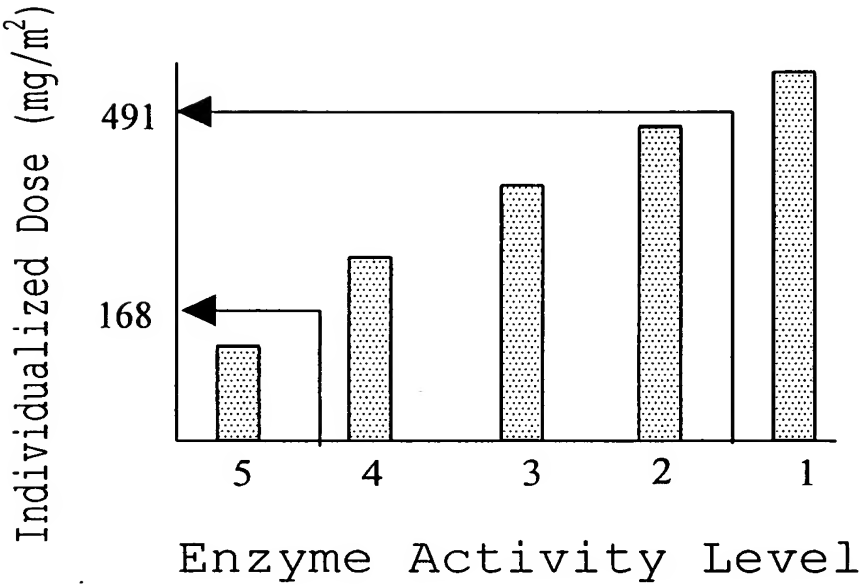

PCR-ELISA
1
2
3
green
color
ABIS
4
DIG
Biotin-Labeled
capture probe
anti-Dig-Ab
Streptavidin

FIG. 28


Individualized Dose (mg/m²)
491
168
5
4
3
2
1
Enzyme Activity Level

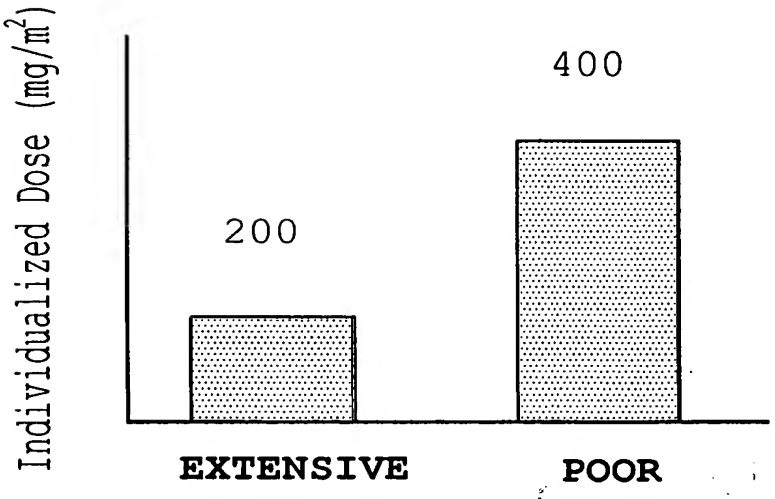

Individualized Dose (mg/m²)
400
200
EXTENSIVE
POOR
Phenotypic Status

FIG. 29

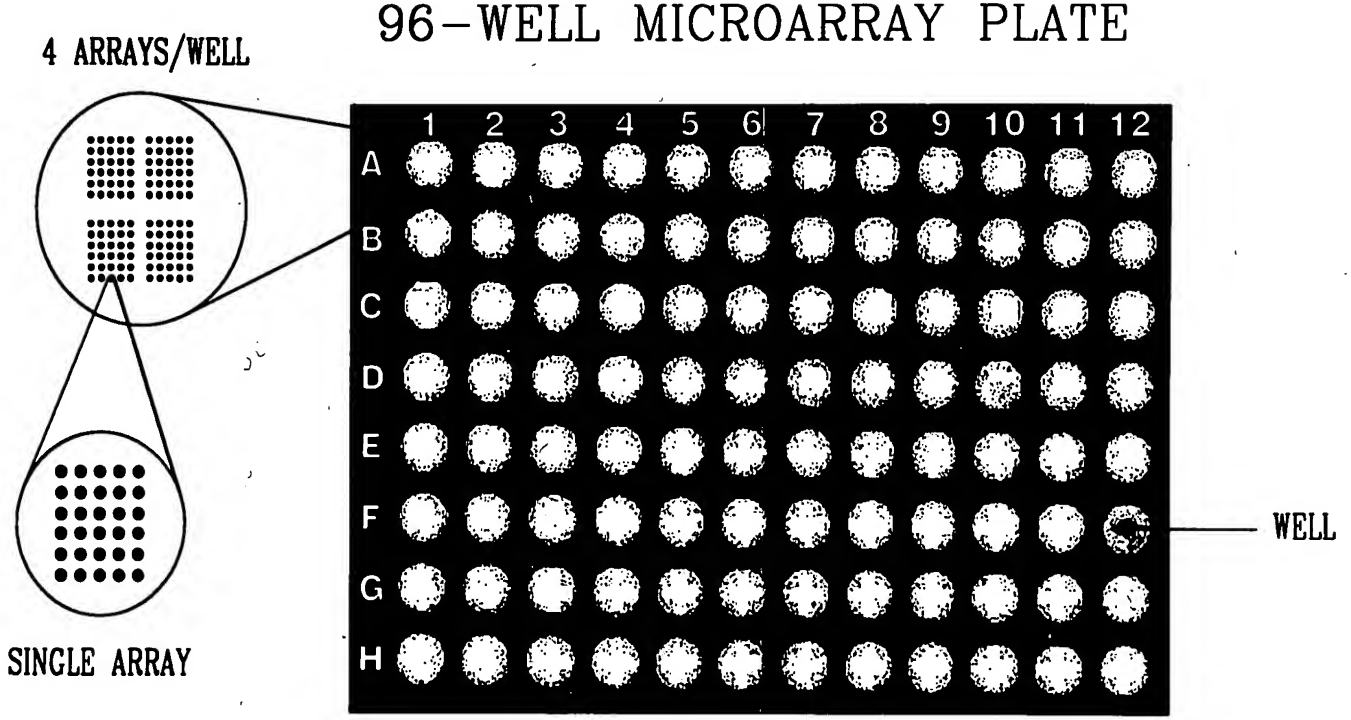

96-WELL MICROARRAY PLATE
4 ARRAYS/WELL
SINGLE ARRAY
1 2 3 4 5 6 7 8 9 10 11 12
A
B
C
D
E
F
G
H
WELL

FIG. 23